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Governor



STATE OF UT.  
DEPARTMENT OF HEALTH  
DIVISION OF ENVIRONMENTAL HEALTH  
Utah Water Pollution Control Committee

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June 15, 1984

RECEIVED  
DEC 05 1986

DIVISION OF  
OIL, GAS & MINING

Mr. Edward Phariss  
Azerado Minerals  
444 South State #305  
SLC, UT 84111

RE: Opher Heap Leach Facility  
Construction Permit

Dear Mr. Phariss:

We have reviewed the plans and specifications for the above referenced project. The revised plans submitted on May 22, 1984 appear to be in compliance with the "Utah Wastewater Disposal Regulations". Therefore, a construction permit as constituted by this letter is hereby issued subject to the following conditions:

1. Representatives of the Bureau of Water Pollution Control and the Tooele County Health Department be allowed opportunity to inspect the site preparation after installation of the leak detection system but before final fill and installation of the synthetic liner.
2. A second or final inspection of the installed liner and the method of placing ore is to be approved before actual operation.
3. A down dip monitoring well will be provided to groundwater, if above 200 ft, prior to application of Cyanide as a measure for quality assurance.

It is our understanding that the natural ground for the leach pad will be contoured, smoothed and compacted prior to the 30 mil PVC liner installation. The liner will extend to mid-point on berms surrounding the leach pad. The exposed areas of the PVC at the edges of the pad on the berm will be covered with 6" of sand to protect it from sun light.

The ponds are to be lined with 30 mil reinforced Hypalon to prevent deterioration of the liner by sun light and for containment of the cyanide leach solutions.




Edward Phariss  
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A well or test boring will be drilled onsite to define specifically the groundwater and local soil conditions. Should drilling results show conditions beneath the site which, under present design, provide a threat to groundwater quality, continuation of the project will cease until adequate measures can be designed and provided to safeguard and reasonably protect these waters. Preliminary information indicates that the nearest groundwater is 331 ft. from the surface.

If there are questions regarding this permit please contact Brian Nelson of this office.

Sincerely,

UTAH WATER POLLUTION CONTROL COMMITTEE

  
Calvin K. Sudweeks  
Executive Secretary

  
BLN:pa  
286-2/3

cc: Tooele County Health Dept.



salts. This is a common Wheatstone Bridge effect. No measurable current flow appears to occur under normal soil moisture/dissolved salt conditions ( $\pm 350$  ppm). Current flow in soils saturated with solutions approximating those to be used in the heap leach process should range around 5 milliamps per linear foot of conductive soil at a 6" wire spacing and under 12 volts potential. A grid of such wire pairs beneath the proposed leach pad and resevoirs, measured for conductivity regularly, should serve as an effective system for the detection of leach solution seepage.

### SYSTEM DESIGN

#### Installation & Baseline Monitoring

The proposed facility plan is shown on Plate 1. Plate 2 outlines the detection grid.

Number 10 guage uncoated steel wire pairs should be buried at a depth of 2 inches in slots cut 6 inches apart as shown on Plate 2. One set of wire pairs at each intersection must be protected with waterproof insulation.

Open wire ends should terminate well inside of the edge of the leach pad (compacted tailings) at the north and east boundaries of the pad. Wires must be carried at a depth of 2 inches in native soil for several feet beyond the south boundary of the leach pad and the west boundary of the solution resevoirs. Wire terminals carried above ground level should be finished with pitchout couplers to assure firm, consistent couples during monitoring, and should be numbered sequentially..

Wire trenches should be carefully backfilled and compacted to original grade to avoid differential settlement of overlying tailings. After installation and backfilling but before placement of tailings for the leach pad and resevoirs, each wire pair should be tested with a fully charged 12 volt battery using a standard ammeter to detect potential shorts or conductive anomalies which may occur in mixed soils. Results should be recorded as the first entry in the Detection System Log.

Care must be exercised in the placement and compaction of tailings over the wire grid to avoid disruption. Wire pairs should again be monitored immediately after completion of the leach pad and resevoirs.

#### Operational Monitoring

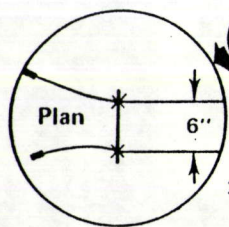
The system should be monitored at a regular time once each 24 hours, using a fully charged 12 volt 100 amp capacity battery. Monitoring must begin at the same starting point and progress in the same direction each day. A monitoring log showing zero current flow or any measurable current flow on each wire pair must be maintained daily and made available to regulatory authorities upon request.

#### System Warnings

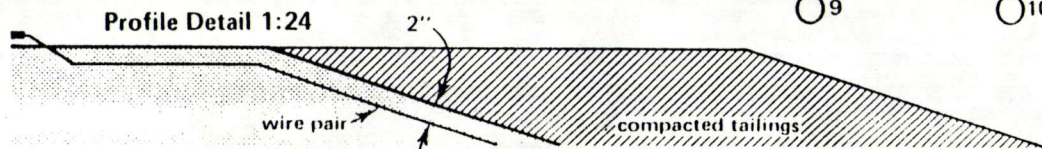
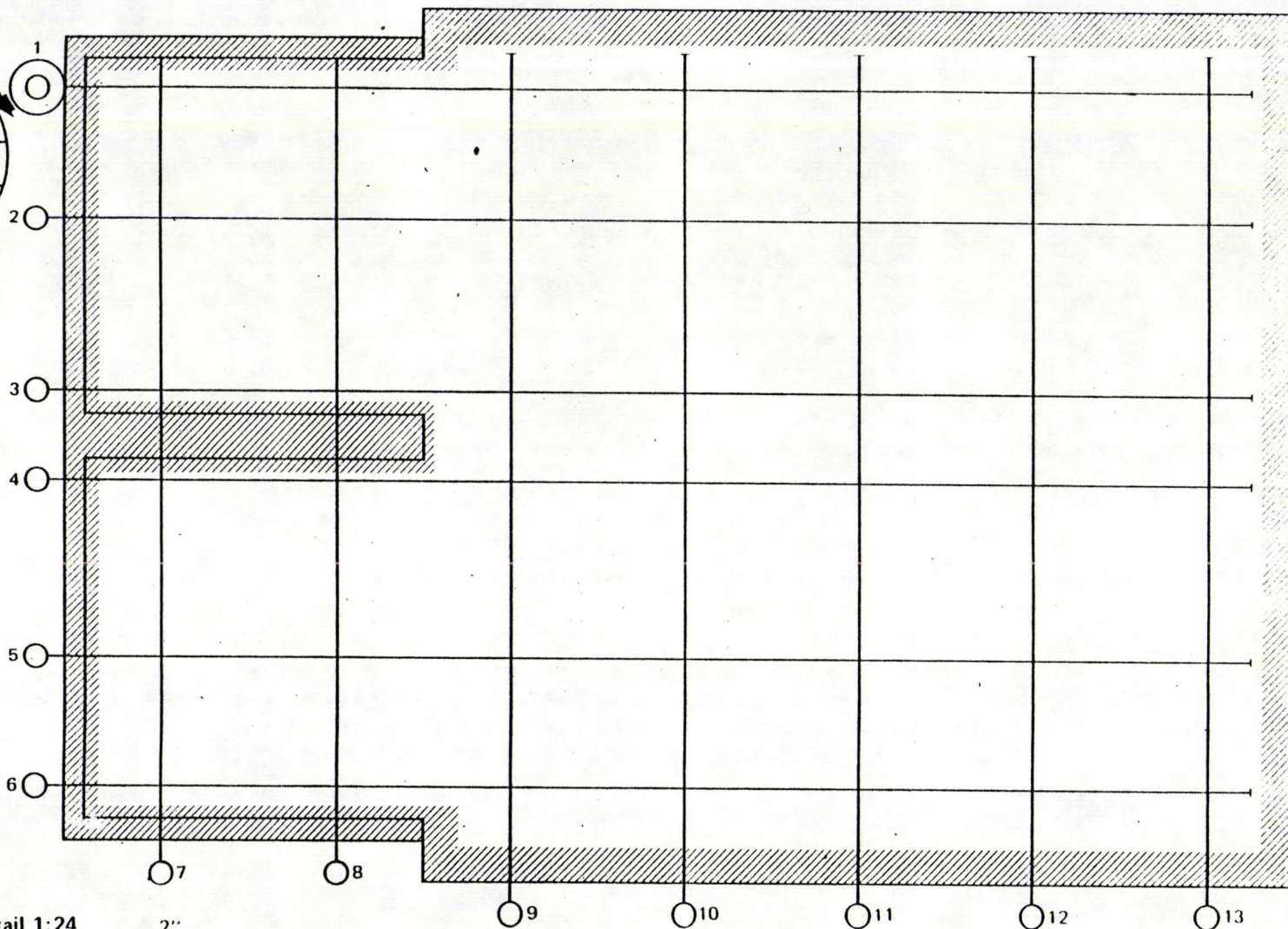
Changes in the system may be manifested as:

*although  
proposed  
I do not  
know if  
this is  
the monitoring  
system  
used  
at Nevada*





Scale 1:480



EXPLANATION

— 10-gauge steel wire pairs - 6" spread

— Open circuit

○ 7 Monitoring terminals

▨ Tailings membrane

Leakage Detection Grid  
OPHER HEAP LEACH FACILITY  
For  
Timberline Industries